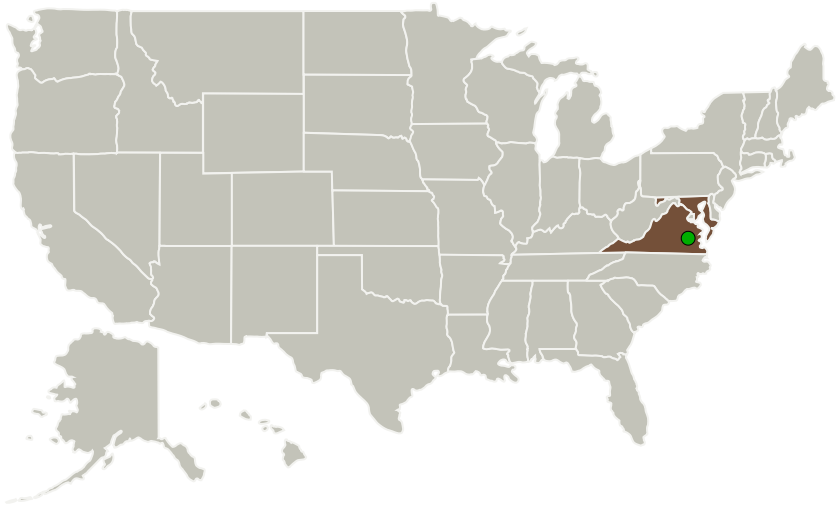
In-Flight Diagnosis and Anomaly Detection, Phase I

Completed Technology Project (2010 - 2010)

Project Introduction

In flight diagnosis and anomaly detection is a difficult challenge that requires sufficient observation and real-time processing of health information. Our approach uses formalized attributes that are available as selectable and enforceable properties necessary for diagnosis based on principles of model based engineering (MBE). Using this information, two strategies are proposed. The first is to use the concept of perfect detectors as executable assertions to verify at run-time correct operating envelope behavior. This information is used to check for correct behavior status or identify entry into a chain of events that could have failure impact. The proposed Phase I effort uses a combination of tool support to analyze the system, identify the properties to be checked, and the failure path information needed by the in-flight diagnosis service. This approach, is relevant to lowering the cost of systems since and provides important benefits related to V&V of complex systems.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
WW Technology Group	Lead Organization	Industry	Ellicott City, Maryland
Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia

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Primary U.S. Work Locations	
Maryland	Virginia

Project Transitions

January 2010: Project Start

July 2010: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/139108)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

WW Technology Group

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

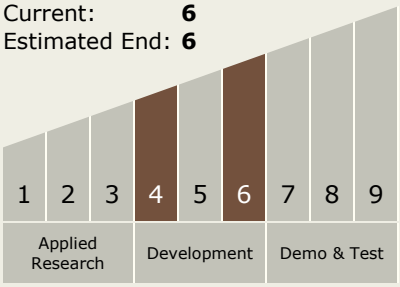
Carlos Torrez

Principal Investigator:

Chris Walter

Technology Maturity (TRL)

Start: **4**
Current: **6**
Estimated End: **6**



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Technology Areas

Primary:

- TX10 Autonomous Systems
  - TX10.2 Reasoning and Acting
    - TX10.2.5 Fault Diagnosis and Prognosis

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System